Magnetic Filtration

Cuts consumable media spend
Reduces environmental impact
Extends fluid life

www.flowezyfilters.com
Why use magnetic filtration?

### Significantly lower operating costs

**Longer lasting fluids**
Magnetic filters remove particles smaller than one micron in size. Traditional barrier filters leave particles smaller than 5 microns circulating in the fluid. These particles significantly affect the performance of fluids and also act as a focus for bacterial build up.

**NO consumables**
Once installed there is nothing else you need to buy to ensure effective filtration over the filter’s lifetime.

**Minimal fluid loss**
Contamination is removed from the filter as a semi-dry ‘cake’. Fluid loss is considerably less than that of traditional filter media.

**NO disposal costs**
The cake itself can be recycled, eliminating specialist disposal costs.

**Minimal running costs**
Manually cleaned magnetic filters require no additional power. Self-cleaning filters only require a small amount of power for the cleaning process.

### More environmentally responsible

**Less fluid used**
More efficient filtration means fluids retain their essential properties for longer giving extended fluid life.

**Contamination can be recycled**
Ferrous contamination is collected and can be easily recycled as a single material.

**Reduced pollution**
No contaminated filter media ends up in landfill.

### Increased productivity

**Maintain flow rates**
High flow rates can be maintained without affecting filtration efficiency. Fluid flow through filter media is uninterrupted. Flow rates are determined by your process requirements, not by your filter.

**No back pressure up**
Even when the filter is ‘full’ there is no blinding or risk of burst filters, reducing downtime.

**Reduced wear**
Particles that pass through traditional filters act as an abrasive, wearing parts, machinery and product. Magnetic filters remove these particles.

**Fine filtration**
Conventional filtration media 5 microns and below can strip oils of anti-foaming, anti-bacteria and other additives. Micromag enables sub-micron filtration without affecting the oil’s characteristics.

### Where to use magnetic filtration

Magnetic filtration can be used in almost any environment where ferrous, para-magnetic and grinding medium contamination of a liquid is a problem.

#### Metalworking / finishing

<table>
<thead>
<tr>
<th>Liquids</th>
<th>Coolants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>Grinding, milling, honing, lapping, fine finishing, Wire &amp; EDM, laser cutting, CNC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liquids</th>
<th>Cleaning fluids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>Part washing, cleaning stations</td>
</tr>
</tbody>
</table>

#### Fuel storage and handling

<table>
<thead>
<tr>
<th>Liquids</th>
<th>Oil, diesel, petrol, bio-fuels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>Tank cleaning, storage inlet and outlet points, fuel dispensers</td>
</tr>
</tbody>
</table>

#### Gearboxes

<table>
<thead>
<tr>
<th>Liquids</th>
<th>Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>General, gearbox maintenance</td>
</tr>
</tbody>
</table>

#### Heating systems

<table>
<thead>
<tr>
<th>Liquids</th>
<th>Hydronic fluids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>Domestic and industrial heating</td>
</tr>
</tbody>
</table>
**Filters in action**

**Barrier filtration**

- contamination particles | fluid

1. Particles smaller than media rating remain in the fluid reducing its efficiency and increasing wear on machinery and cutting tools
2. Once full, the contaminated media is disposed of along with fluid held in the filter medium
3. The filter becomes clogged causing blinding and back pressure

**Magnetic filtration**

1. All particles are removed
2. Once full, the contamination is removed from the magnet and can be recycled with little loss of fluid and can be recycled
3. Patented magnet configuration means that even when the filter is full, flow channels remain open so there is no blinding or pressure build up

**CASE STUDIES Magnetic filtration in use**

**Reduced environmental impact**

Elite Tooling installed a Filtramag magnetic filter on a Walter Helitronic Power Grinder, used for manufacturing carbide cutting tools, and were able cut consumable costs and sell removed contamination for recycling.

**Increased production efficiency**

Honda installed a Micromag on a bespoke machine used for manufacturing engine valve seats – where accuracy and finish quality is critical. Not only was part quality improved but the filter’s minimal maintenance requirements meant that machine downtime was significantly reduced.

**Significant savings made**

Auto parts manufacturer ThyssenKrup was having to replace one pump per week in its de-greasing plant due to inefficient filtration. After installing an Eclipse Magnetics filter before the pumps this figure was reduced dramatically. The cost of the filter was paid back within weeks.
Magnetic filter range

MICROMAG

In-line/offline filtration
Manually cleaned
Styrene Acrylo Nitrile (SAN)
Temp range: 41° to 122°F.

Product number | Flow rate | Contam. capacity | Max. operating pressure | Connection
--- | --- | --- | --- | ---
MM5/1.0 | 18 | 2.2 | 174 | *
MM10/1.0 | 26 | 4.4 | 174 | *
MM20/1.5 | 40 | 8.8 | 174 | 1½

FILTRAMAG
Higher flow, higher contamination. Applications with less magnetic contamination e.g. grinding medium, para-magnetic steel, carbide. Harsh chemical environments.

In-line/offline filtration
Full stainless steel construction
Temp range: 41° to 158°F.

AUTOMAG
Higher flow, higher contamination. Non-stop operations. Harsh chemical environments.

In-line/offline filtration
Automated self-purging (air operated)
Temp range: 41° to 158°F.

AUTOFILTREX
Highest flow, highest contamination. Non-stop operations.

Offline filtration system
Full stainless steel construction (PTFE coated as an option)
Touch-screen programming
Supplied as a turnkey package
Temp range: 41° to 158°F.
Made to order.

MICROMAG Product Data

<table>
<thead>
<tr>
<th>Product number</th>
<th>Number of cores</th>
<th>Flow rate</th>
<th>Contam. capacity</th>
<th>Operating pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM1.5M/NPT</td>
<td>3</td>
<td>66</td>
<td>55</td>
<td>13.2</td>
</tr>
<tr>
<td>FM2.5/NPT</td>
<td>6</td>
<td>132</td>
<td>110</td>
<td>174</td>
</tr>
</tbody>
</table>

AUTOMAG Product Data

<table>
<thead>
<tr>
<th>Product number</th>
<th>Number of cores</th>
<th>Flow rate</th>
<th>Contam. capacity</th>
<th>Operating pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM6/NPT</td>
<td>6</td>
<td>119</td>
<td>99</td>
<td>3</td>
</tr>
<tr>
<td>AM12</td>
<td>12</td>
<td>238</td>
<td>198</td>
<td>6½</td>
</tr>
</tbody>
</table>

Eclipse Tools North America Inc.
442 Millen Road, Unit #9, Stoney Creek, Ontario, L8E 6H2, Canada
T: 1-800-260-2124
F: 1-800-260-1410
sales@eclipsetoolsinc.com
www.eclipsetoolsinc.com
Filtramag+ is a high performance magnetic filter with full stainless steel construction which makes it suitable for use in a variety of industry sectors and applications.

- Patented design
- Easy installation
- Unique dual flow technology™ — maximises collection capability
- Operates at up to 290psi bar
- Removes both magnetic and non-magnetic contamination
- Minimal pressure drop
- In-line connections
- Ideal for use in harsh chemical environments

Dual flow technology™
Filtramag+ is the most efficient filter of its type. The dual chambered design means that fluid is exposed to the high intensity magnets for the maximum time thus ensuring almost 100% of contamination is removed on first pass through the filter. The patented magnetic circuit on the 4,000 gauss version design ensures that the filter can never block even in high contamination applications.

Magnetic core options
High intensity magnetic cores ensure particle filtration down to sub-micron size. For standard machining or wash system applications a 4,000 gauss magnetic core pack is available. For applications which involve lower magnetically permeable materials e.g. Cast Iron and Carbide or require an ultra-precise surface finish an 11,000 gauss magnetic core pack is available.

Benefits
Using fully filtered fluids, free from ferrous particles provides:
- Improved surface finish
- Cost savings on disposable filtration media
- Extended fluid lifespan
- Reductions in waste disposal
- Longer lasting tools and machinery

Suitable fluids
Oil, coolants, fuel, ink, paint, chemicals.

Suitable locations
Pre & Post fluid holding tank, machine or process

Typical applications
- With carbide or cast iron materials
- General machining operations
- Inks/paints
- Wash systems
- Diesel/gasolene
- Slurry/glazes

Filtramag+ Components
- Quick release swing bolts
- Optional mesh strainer - removes non-magnetic debris (FM 2.0™ ANSI only)
- Flanged connections (Hose tail adaptors available)
- Integral base can be bolted to floor
- Restricted hinged lid - prevents over travel
- Parallel inlet and outlet
- Patented high intensity magnetic rods
- Easy access for gloved hand
Technical Data

Magnetic Performance

<table>
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<tr>
<th>Maximum Pressure</th>
<th>290psi</th>
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<tr>
<td>Magnetic Performance</td>
<td>Standard option 4,000 gauss, high intensity option 11,000 gauss</td>
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<tr>
<td>Magnet material</td>
<td>NdFeB</td>
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<tr>
<td>Magnet grade</td>
<td>N45 (High intensity option)</td>
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<tr>
<td>Temperature</td>
<td>23 to 176F</td>
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Part Numbers (including spares)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>FM1.5+/ANSI</td>
<td>FM1.5+ unit with 4,000 magnet cartridge, cleaning tool &amp; cleaning tray</td>
</tr>
<tr>
<td>FM2.0+/ANSI</td>
<td>FM2.0+ unit with 4,000 magnet cartridge, cleaning tool &amp; cleaning tray</td>
</tr>
<tr>
<td>FM1.5+/ANSI /11K</td>
<td>FM1.5+/ANSI unit with 11,000 magnet cartridge, cleaning tool &amp; cleaning tray</td>
</tr>
<tr>
<td>FM2.0+/ANSI /11K</td>
<td>FM2.0+/ANSI unit with 11,000 magnet cartridge, cleaning tool &amp; cleaning tray</td>
</tr>
<tr>
<td>FM1.5+/ANSI/MC</td>
<td>4,000 magnet cartridge for FM1.5+/ANSI units</td>
</tr>
<tr>
<td>FM2.0+/ANSI/MC</td>
<td>4,000 magnet cartridge for FM2.0+/ANSI units</td>
</tr>
<tr>
<td>FM1.5+/ANSI /MC11K</td>
<td>11,000 magnet cartridge for FM1.5+/ANSI units</td>
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<tr>
<td>FM2.0+/ANSI /MC11K</td>
<td>11,000 magnet cartridge for FM2.0+/ANSI units</td>
</tr>
<tr>
<td>FM2.0+/ANSI /MB0.5</td>
<td>Optional 0.5mm mesh basket for FM2.0+/ANSI units</td>
</tr>
<tr>
<td>FM2.0+/ANSI/MB1.0</td>
<td>Optional 1.0mm mesh basket for FM2.0+/ANSI units</td>
</tr>
<tr>
<td>FM1.5+/ANSI /VS</td>
<td>Spare Viton seal for FM1.5+/ANSI units</td>
</tr>
<tr>
<td>FM2.0+/ANSI /VS</td>
<td>Spare Viton seal for FM2.0+/ANSI units</td>
</tr>
</tbody>
</table>

Materials

| Housing | 304 Grade Stainless Steel |
| Lid | 304 Grade Stainless Steel |
| Tube | 316 Grade Stainless Steel |
| Surface finish | External–powder coated |
| Sealing | Viton O-ring |
| Mesh strainer | 304 Grade Stainless Steel |
| Swing bolts | High tensile steel |
| Cleaning Tool | Stainless steel |
| Mesh strainer options (FM2.0+/ANSI only) | 0.02inches and 0.04inches aperture size |

Product number Max. flow rate | Contamination capacity | Max. operating pressure | Connection | Dimensions |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
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<tr>
<td></td>
<td>Galkins</td>
<td>lbs</td>
<td>PSI</td>
<td>ANSI</td>
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<tr>
<td>FM1.5+/ANSI</td>
<td>66</td>
<td>6.6</td>
<td>290</td>
<td>1½</td>
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<tr>
<td>FM2.0+/ANSI</td>
<td>132</td>
<td>13.2</td>
<td>290</td>
<td>2</td>
</tr>
</tbody>
</table>
Micromag

Compact magnetic filter

Removes ferrous contamination from all industrial fluids

Environmentally responsible – waste can be recycled
Efficient – collects all ferrous contamination
Economical – no consumables

Flow Ezy Filters, Inc.
P.O. Box 1749
Ann Arbor, MI 48106
phone (800) 237-1165 or (734) 665-8777
fax (800) 252-1730 or (734) 665-4332
e-mail: flowezy@flowezyfilters.com
web site: www.flowezyfilters.com
Micromag compact magnetic filter

Highly efficient filtration
Sub-micron filtration efficiency: if the particle is magnetic, even partially, the Micromag will remove it.

Capable of removing abrasives and non-magnetic material by means of heterocoagulation.

Visual inspection of fluid being filtered and contamination collected.

Cost cutting
No consumables required, ever.

No loss of fluid due to changing oil sodden cartridges.

No pressure drop, even when fully loaded with contamination thanks to patent pending magnetic circuit design.

No maintenance required, only operator intervention to clean.

Reduced downtime, increased productivity.

Environmentally responsible
Contamination removed as material; which can be recycled – no need to dispose of dirty cartridges.

Fluids remain effective for longer so fluid use is reduced.

Micromag magnetic filters are used effectively in these applications:
- Grinding, honing & lapping machines
- Manual & CNC machinery
- Fine finishing operations
- Wire & EDM processes
- Laser cutting operations
- Injection moulding cooling & heating systems
- Industrial part washing
- Press brake lubricant
- Transmission
- Engines
- Post drill head operations
- Saw sharpening
- Pump protection
- Pre-filtration
- Quenching operations
- Domestic & industrial heating systems

HOW MICROMAG WORKS

Contaminated fluid enters the inlet port where it is equally dispersed by the unique tapered radial flow channels. These channels slow the fluid down.

Fluid then passes down the outside of the centrally mounted ‘rare earth’ magnetic core where contamination particles are removed.

The geometry of the magnetic flux circuit ensures a controlled build up of contamination so the filter can never block.

The filtered fluid then flows through return slots at the top of the magnetic core and down through the centre, exiting through the outlet port.

Unmatched capacity
Micromag is compact in size but has massive holding capacity. No filter can match its capability with the units holding 900g, 1800g and 3800g of contamination respectively, resulting in less downtime and increased productivity.
CLEANED IN SECONDS

Using the supplied cleaning tool, a fully contaminated core can be cleaned in under 30 seconds leaving only metallic particles, which can be easily disposed of or recycled.
Product data

MICROMAG
Standard machine filtration. smaller
wash stations. Non-chemical environments.
Inline/offline
Manually cleaned
SAN bowl
Temp range: 41° to 122°F.

<table>
<thead>
<tr>
<th>Product number</th>
<th>Flow rate</th>
<th>Contam. capacity</th>
<th>Max. operating pressure</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US gallons/min.</td>
<td>gallons/min.</td>
<td>psi</td>
<td>\ NPT</td>
</tr>
<tr>
<td>MM5/1.0</td>
<td>18</td>
<td>15</td>
<td>2.2</td>
<td>174</td>
</tr>
<tr>
<td>MM10/1.0</td>
<td>26</td>
<td>22</td>
<td>4.4</td>
<td>174</td>
</tr>
<tr>
<td>MM20/1.5</td>
<td>40</td>
<td>33</td>
<td>8.8</td>
<td>174</td>
</tr>
</tbody>
</table>

Ancillary equipment

Core cleaning post  Viton ‘O’ ring

OTHER MAGNETIC FILTERS

Larger filter for higher contamination capacity and flow rates. Precision grinding machines and fine finishing operations. Arduous environments. Inline applications.

Automated self-cleaning filter requiring no user intervention. Inline applications.

Automag

Self-purging, fully automated magnetic filter

Flow Ezy Filters, Inc.  
P.O. Box 1749  
Ann Arbor, MI 48106  
phone (800) 237-1165 or (734) 665-8777  
fax (800) 252-1730 or (734) 665-4332  
e-mail: flowezy@flowezyfilters.com  
web site: www.flowezyfilters.com
The benefits of automated magnetic filtration

No consumables required
Automag only requires small amounts of compressed air, which powers the process. It does not require filter cartridges, or any other filter media.

Fully autonomous
Let operators do what they’re good at: operating expensive and critical machinery. Automag can run 24/7 continuously without the need for operator intervention.

No loss of fluid
Automag, when used with a purged fluid cleaning device, produces a dry ‘cake’ of contamination that can be recycled. Unlike cartridge filters no fluid is thrown away with contaminated filter media.

No line pressure increase
Even when fully saturated with contamination the Automag never builds up the backpressure that causes burst socks or cartridges. The Automag’s design ensures pressure is always maintained.

No maintenance
The only moving part in the Automag system is the magnetic core shuttle. The magnetic cores are encased in stainless steel tubes; fluid does not come into contact with any moving parts.

Sub-micron filtration
Automag removes sub-micron magnetic contamination, improving surface finish and overall machined accuracy.

PLC compatible
All Automags can be supplied with a fully programmed PLC that can communicate with machine tools or auxiliary equipment. This also allows multiple Automags to operate in parallel.
The Automag magnetic filter from Eclipse Magnetics uses powerful ‘rare earth’ magnetic material to improve the quality, efficiency and performance of manufacturing and finishing processes.

The fully automatic, self purging unit effectively removes all magnetic debris, down to sub-micron size, from cutting fluids and oils. This ensures clean fluid is available at the cutting face resulting in an enhanced surface finish and reduced final-inspection scrap.

The filter does not use consumables, unlike cartridge and bag filters, operates without user intervention and requires only a small amount of compressed air to operate the cleaning process. Running costs are extremely low.

Payback can be calculated in months rather than years.

Automag can also benefit many other manufacturing applications – from industrial part washing systems to vehicle pre-paint body washing stations and any other applications that rely on a clean supply of filtered fluid.

6 and 12 core units are supplied.

**Automag magnetic filters are used effectively in these applications:**
- Grinding, honing & lapping machines
- CNC machinery
- Fine finishing operations
- Industrial part washing
- Post drill head operations
- Circular saw sharpening
- Pump protection
- Pre-filtration
- Quenching operations

**in the following sectors**
- Machine tools
- Manufacturing
- Automotive
- Hydraulic
- Marine
- Oil
- Transport
- Water
- Yellow & white goods

**HOW AUTOMAG WORKS**

Contaminated fluid enters the inlet port where it is dispersed into the first filtration chamber. The fluid passes around the high-intensity ‘rare earth’ magnetic cores where contamination particles are removed. The fluid is slowed and enters the second filtration chamber where it receives further filtration.

Contamination remains attached to the stainless steel sleeves of the cores. The filtered fluid exits through the outlet port to be re-circulated.

The geometry of the magnetic flux circuit ensures a controlled build up of contamination so the filter can never block.

The purging process is fully automated. The cores are raised from the sleeves and the purge valve is switched. Fluid is pumped through the filter washing the contamination from the unit.

**In use** Contamination is attracted to the sleeve of the cores. Cleaned fluid is re-circulated.

**Purging** Compressed air lifts the cores from the sleeves and the purge valve is opened. Contamination is released and washed away for collection.
Control panel
Cleaning cycle time and duration is controlled from the control panel or by PLC. From the control panel cycle time can be set to between 1–45 minutes, cleaning duration from 1–10 seconds. Timings are determined by contamination levels.

Fluid flow configuration
A unique two chamber flow configuration ensures that maximum filtration efficiency is achieved. Fluid is slowed in the Automag and evenly distributed around the magnetic cores.

Magnetic cores
The magnetic cores are made using ‘rare earth’ neodymium iron boron – currently the strongest permanent magnet material available. When configured with pole concentrators, high-intensity magnetic fields are generated which are capable of attracting even sub-micron sized particles.

Each core is housed inside a stainless steel sleeve. The cores are held together in a moveable ‘shuttle’ unit. Cleaning is triggered by a small amount of compressed air moving the shuttle up out of the these sleeves. The contamination, which has been held to the surface of the sleeve by the magnetic field, is then released, allowing it to be purged from the unit.

Purging
The purge valve is automatically opened as part of the cleaning process. This redirects the fluid into a contamination collection tank. A fixed amount of fluid is allowed through the Automag, purging the contamination into this tank where it can be recycled and reclaimed.
Magnetic coolant roller

The magnetic coolant roller should be used to separate the fluid and contamination output by the Automag’s purging process.

Reduced fluid waste and disposal costs

The contamination is removed by the coolant filter in the form of a semi-dry metallic cake which can be recycled.

The extracted fluid can be re-used.

Product data

How it works

Contaminated fluid is fed into the inlet feed tray where it spreads evenly. The fluid passes the adjustable baffle plate and onto the magnetic roll which attracts and holds the contamination. The contamination particles follow the rotation of the roll around to the cleaning scrapper blade. This wipes off any collected contamination allowing it to fall freely into a collection bin.

Cleaning is continuous.

Suitable for all neat and soluble oils.

<table>
<thead>
<tr>
<th>Part no.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Max flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECC15/300</td>
<td>5%</td>
<td>11%</td>
<td>17%</td>
<td>13%</td>
<td>2%</td>
<td>47.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>39.5</td>
</tr>
</tbody>
</table>

See Datasheet No. 406
Product data

Higher flow, higher contamination.
Non-stop operations
Harsh chemical environments

Inline/offline
Automated self-cleaning (air operated)
Full stainless steel construction
Temp. range: 41° to 158°F.
Multiple units can be grouped for higher capacity
Ex stock

<table>
<thead>
<tr>
<th>Product number</th>
<th>Number of cores</th>
<th>Flow rate gallons/min.</th>
<th>Contam. capacity lbs</th>
<th>Max. operating pressure psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM6/NPT</td>
<td>6</td>
<td>119</td>
<td>99</td>
<td>3</td>
</tr>
<tr>
<td>AM12</td>
<td>12</td>
<td>238</td>
<td>198</td>
<td>6¼</td>
</tr>
</tbody>
</table>

Dimensions in inches unless stated (nominal)

<table>
<thead>
<tr>
<th>Product number</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<tbody>
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<td>40</td>
<td>14¾</td>
<td>10 ⅞</td>
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<td>22¾</td>
<td>17½</td>
<td>2&quot; NPT male</td>
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<tr>
<td>AM12</td>
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<td>24 ⅜</td>
<td>16</td>
<td>4 ⅝</td>
<td>26½</td>
<td>16</td>
<td>3&quot; PN16 flange</td>
</tr>
</tbody>
</table>

OTHER MAGNETIC FILTERS

Compact, general purpose magnetic filter. Most machining applications.

Larger filter for higher contamination capacity and flow rates. Precision grinding machines and fine finishing operations. Arduous environments.

Modular, stand-alone system. Automated self-purging, non-stop filtration for highest capacity applications.